Preface

The fast evolution and the increased pervasiveness of computers and communication networks have led to the development of a large variety of complex applications and services which have become an integral part of our daily lives. Modern society widely relies on information technologies. Hence, the Quality of Service, that is, the efficiency, availability, reliability, and security of these technologies, is an essential requirement for the proper functioning of modern society.

In this scenario, performance evaluation plays a central role. Performance evaluation has to assess and predict the performance of hardware and software systems, and to identify and prevent their current and future performance bottlenecks.

In the past thirty years, many performance evaluation techniques and tools have been developed and successfully applied in studies dealing with the configuration and capacity planning of existing systems and with the design and development of new systems. Recently, performance evaluation techniques have evolved to cope with the increased complexity of the current systems and their workloads. Many of the classical techniques have been revisited in light of the recent technological advances, and novel techniques, methods, and tools have been developed.

This book is organized around a set of survey papers which provide a comprehensive overview of the theories, techniques, and tools for performance and reliability evaluation of current and new emerging technologies. The papers, by leading international experts in the field of performance evaluation, are based on the tutorials presented at the IFIP WG 7.3 International Symposium on Computer Modeling, Measurement, and Evaluation (*Performance 2002*) held in Rome on September 23–27, 2002.

The papers address the state of the art of the theoretical and methodological advances in the area of performance and reliability evaluation as well as new perspectives in the major application domains. A broad spectrum of topics is covered in this book. Modeling and verification formalisms, solution methods, workload characterization, and benchmarking are addressed from a methodological point of view. Applications of performance and reliability techniques to various domains, such as, hardware and software architectures, wired and wireless networks, Grid environments, Web services, real–time voice and video applications, are also examined.

This book is intended to serve as a reference for students, scientists, and engineers working in the areas of performance and reliability evaluation, hardware and software design, and capacity planning.

Finally, as editors of the book, we would like to thank all authors for their valuable contributions and their effort and cooperation in the preparation of their manuscripts.

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